ITEM 1022

32

SEWER AUTHORITY MID-COASTSIDE

SAN MATEO COUNTY, CALIFORNIA

DRAFT

REVENUE PROGRAM

REGIONAL WASTEWATER TREATMENT FACILITIES

(PROJECT No. C-06-1022-130)

FEBRUARY 1982

MAC MID-COASTSIDE AREA CONSULTANTS

AN ENGINEERING JOINT VENTURE

BLACK & VEATCH
BARRETT HARRIS & ASSOCIATES
RESOURCES ENGINEERING & MANAGEMENT

CONSULTING ENGINEERS

SEWER AUTHORITY MID-COASTSIDE

SAN MATEO COUNTY, CALIFORNIA

DRAFT

REVENUE PROGRAM

REGIONAL WASTEWATER TREATMENT FACILITIES

(PROJECT No. C-06-1022-130)

FEBRUARY 1982

MAC MID-COASTSIDE AREA CONSULTANTS

AN ENGINEERING JOINT VENTURE

BLACK & VEATCH
BARRETT HARRIS & ASSOCIATES
RESOURCES ENGINEERING & MANAGEMENT

CONSULTING ENGINEERS

SEWER AUTHORITY MID-COASTSIDE

SECTION		Page
I	Introduction, Background, and Scope of Report A. Introduction B. Background C. Project Status D. Scope of Report	3
II	Project Financing A. Project Description B. Project Costs C. Cost Sharing Arrangements D. Project Financing	5
III	Annual Revenue Requirements A. Capital Costs B. Administrative Costs C. Operation and Maintenance Costs 1. Personnel Services 2. Insurancce 3. Auto Expense 4. Conferences and Meetings 5. Materials and Supplies 6. Outside Service Contracts 7. Repairs and Maintenance 8. Telephone 9. Utilities 10. Continuing Education 11. Office Expense D. Operation Reserve E. Renewal and Replacement	12
IV	Cost Allocation A. Capital Cost Allocation B. Annual Cost Allocationn C. Collection System Operaton & Maint. Costs 1. Montara Sanitary District 2. Granada Sanitary District 3. City of Half Moon Bay D. Cost Allocation Should Anticipated Population Growth Not Occur	33

		Page
V	Implementation	49
	A. Rate Ordinance	
	B. Industrial Cost Recovery	
APPENDIX		
	A. Sewer Rate Ordinances	
	Montara Sanitary District	
	Granada Sanitary District	
	City of Half Moon Bay	
	B. Collection System Evaluations	
	Granada Sanitary District	
	Montara Sanitary District	
	City of Half Moon Bay	

I. INTRODUCTION, BACKGROUND, AND SCOPE OF REPORT

A. INTRODUCTION

The Sewer Authority Mid-coastside is three member - joint powers agency which was formed to facilitate construction of regional wastewater treatment facilities for the coastal San Mateo County communities of Montara, El Granada, and the City of Half Moon Bay. Montara and Granada are unincorporated communities which lie within the jurisdiction of the County of San Mateo. Wastewater service and treatment has been provided for these communities since the early 1960's through, respectively, Montara Sanitary District and Granada Sanitary District.

The City of Half Moon Bay is an incorporated general law city in San Mateo County . The city provides wastewater service and treatment for its citizens through the auspices of the city agencies.

The three member agencies of SAM (Montara Sanitary District (MSD), Granada Sanitary District (GSD), and the City of Half Moon Bay (HMB) entered into a Joint Powers Agreement (JPA) in 1976 to implement construction of joint wastewater facilities to serve the three agencies.

To date, intertie pipelines and pumping facilities have been constructed. An ocean outfall has been partially constructed. Bids are being received to complete the remainder of the ocean outfall and a contract has been awarded to construct a joint wastewater treatment plant by modifying and upgrading the existing wastewater plant at the City of Half Moon Bay.

B. BACKGROUND

Regulatory Requirements

The Sewer Authority Mid-Coastside is presently at the midpoint of a two phase project which will regionalize wastewater treatment facilities at a new wastewater treatment facility located at Half Moon Bay. Both phases I (intertie pipeline, pumping facilities, and ocean outfall) and phase II (wastewater treatment facilities) have, and will, be funded in part by the Federal and State Clean Water Grant Programs. As a condition of these grants, the Federal and State programs require that SAM implement a user

charge system during the first full year of operation of the facility that will, as a minimum, recover system related operation and maintenance expenses (including replacement costs associated with the requirement that system design capacity must be retained). The user charge system must result in the distribution of these costs among all users in proportion to their loadings on the treatment system.

The purpose of this Revenue Program is to develop methodology and to provide documentation and model ordinances which will assist the agency in implementing the required user charge system.

C. PROJECT STATUS

In the mid-1970's preliminary engineering studies were performed which lead to the adoption of a plan to implement regionalization of wastewater treatment facilities for the three member agencies of SAM. A preliminary revenue program was prepared and submitted to the state Water Resources Control Board during the Step 1 planning process.

To date Unit 1 (intertie pipeline) and Unit 2 (pumping facilities) are complete. Unit 4 (ocean outfall) is partially complete and a contract has been awarded for Unit 3 (wastewater treatment facilities).

The facilities, when complete will provide SAM with the capability of treating 2.0 million gallons of wastewater from the three member agencies.

D. SCOPE OF REPORT

This revenue program develops the capital costs and the annual operation and maintenance costs (including replacement costs) associated with the Sewer Authority Mid-Coastside Wastewater Treatment Facility Project. Annual operation and maintenance costs are distributed among the three member agencies and prorated among the users in proportion to their loadings on the treatment system. A model sewer rate ordinance is presented which will recover all system costs in a fair and equitable manner.

II. PROJECT FINANCING

A. PROJECT DESCRIPTION

The SAM project, when completed, will expand the present activated sludge treatment facility in Half Moon Bay to an ADWF capacity of 2.0 mgd and intertie this regional plant with MSD and GSD in order to treat the consolidated Montara, El Granada, Half Moon Bay flows. PDWF will be 4.43 mgd at capacity and PWWF will be 7.1 mgd at capacity.

Project Unit 1, consisting of 7.42 miles of sewer pipeline (5.61 miles of force main and 1.81 miles of gravity) extends from the pump station at Montara (formerly the Montara Treatment Plant) to the treatment plant in Half Moon Bay. Project Unit 2 constructed three pump stations accommodating ADWF of 1.0 mgd. Included in Unit 2 was the construction at the existing pump station in Princeton which was upgraded and expanded to handle 0.6 mg/d ADWF. Lastly, a new pump station was constructed at Avenue Portola with a capacity of 1.0 mg/d ADWF to accept the flows from Montara and Princeton Pump Stations and pump it to the Unit 3 treatment plant in Half Moon Bay.

The Unit 3 treatment plant process will include comminution of sewage solids, influent pumping, pre-aeration for grease and grit removal, primary sedimentation, biological treatment by activated sludge, secondary sedimentation, effluent chlorination-dechlorination and sludge digestion.

Project Unit 4 consists of an outfall pipeline, discharging secondary treatment effluent to the ocean at Half Moon Bay.

In Project Unit 5 it is proposed to construct a reclaimed water pipeline to transport reclaimed wastewater from the regional treatment plant to the agricultural areas south of Half Moon Bay. This proposed project is phase III of the project and is not considered in this Revenue Program.

Project Units 1 through 4 are being funded in part by grants from the State of California and the U.S. Environmental Protection Agency through the Clean Water Grant Program.

TABLE II-1

SAM REVENUE PROGRAM

CAPITAL COST SUMMARY

Item	Unit 1	Unit 2	Unit 3	Unit 4	Totals
1. General	$ 12,322	$ 19,168	$ 67,087	$ 38,335	$ 136,912
2. Const. Cntr.	$1,600,782	$2,486,240	$8,000,000	$2,800,000	$ 14,887,022
3. Legal	$ 1,890	-	$ 17,662	$ 200,000	$ 219,552
4. Adm & Insp.	$ 131,115	138,500	$ 725,000	$ 500,000	$ 494,615
5. Const. Mgt.	$ 13,735	$ 9,000	$ 35,000	$ 50,000	$ 1,107,735
6. Misc.	-	$ 45,336	$ 4,000	$ 146,106	$ 195,442
7. Design & Predesign	$ 72,943	$ 113,467	$ 311,074	$ 225,194	$ 722,678
Subtotal	$1,832,787	$2,811,711	$9,159,823	$3,959,635	$ 17,763,956
8. Anticipated Future Costs				$5,000,000	$5,000,000
Totals	$1,832,787	$2,811,711	$9,159,823	$8,959,635	$22,763,956

* Includes Construction Engineering + Contingencies
** Includes $7,057 retention for claims
*** Calculated at 10% of bid price

TABLE II-2

SAM REVENUE PROGRAM
CAPITAL COST DISTRIBUTION

	Project Cost	Grant Fundable	Local Share
Unit 1	$ 1,833,000	$ 1,603,875	$ 229,125
Unit 2	2,812,000	$ 2,303,875	$ 508,125**
Unit 3	9,160,000	$ 7,786,000	$1,374,000
Unit 4	4,000,000	$ 3,500,000	$ 500,000
Subtotals	$17,805,000	$15,193,750	$2,611,250
Additional Costs-Unit 4	$ 5,000,000	$ 612,500*	$ 87,500*
Totals	$22,805,000	$15,806,250	$2,698,750

* (Project Cost - 2.9 million - remaining original grant)

** Includes $179,000 non-grant fundable at Portola P.S.

TABLE II-3

SAM REVENUE PROGRAM
CAPITAL COST DISTRIBUTION

	Local Share HMB	Local Share Granada	Local Share Montara
Unit 1	-	$ 137,475	$ 91,650
Unit 2	-	$ 304,875	$ 203,250
Unit 3	$ 687,000	$ 412,200	$ 274,800
Unit 4	$ 250,000	$ 150,000	$ 100,000
Subtotals	$ 937,000	$1,004,550	$ 696,700
Additional Costs-Unit 4	$ 43,750	$ 26,250	$ 17,500
Totals	$ 980,750	$1,030,800	$ 687,200

B. PROJECT COSTS

Project costs of the various project units are summarized in Table II-1. Units 1 and 2 are complete at this time and therefore the project costs presented are taken from the project accounts and are estimated to be final project costs. Unit 3 costs are based on the actual low bid and include estimated costs for construction contingencies, construction management and engineering, and project administration. Unit 4 is less then 50% complete. Project plans and bid documents are being prepared for rebidding of the project due to default of the original contractor. The project costs for Unit 4 are derived from actual project accounts to date. To that has been added an estimate of the remaining costs to complete the project unit.

Certain costs from the general project account (i.e. Legal, Miscellaneous Costs, Predesign Costs, and General Costs) which have not been designated against a particular project unit account have been prorated against each unit based on the prorata share of the construction costs.

The Local Share and Grant Fundable portions of the several project units have been estimated from project records for Units 1 & 2 and developed from estimates of eligible and ineligible items for Units 3 & 4. These shares are summarized in Table II-2.

C. COST SHARING ARRANGEMENTS

Project costs are to be shared between the three member agencies of SAM (Montara Sanitary District, Granada Sanitary District, and the City of Half Moon Bay) according to the provisions of the Joint Powers Agreement executed by the three agencies. This agreement, in general, provides for cost sharing based on each agencies prorated share of wastewater capacity needs as projected in the Certified Local Coastal Plans (LCP) for each agency. Since the present wastewater facilities project will not - because of Coastal Commission dictates - meet the projected LCP capacities for the initial 20 year planning period, each agency has agreed to share the shortfall based, again, on their prorata share of LCP projected capacity needs.

At present, Montara Sanitary District (MSD) and Granada Sanitary District (GSD) have a certified LCP in force which was prepared by San Mateo County. The City of Half Moon Bay (HMB) has completed its LCP but it is not, as yet, been

certified. Until HMB's Local Coastal Plan is certified the exact shares for each of the member agencies cannot be defined, however, for the purpose of this report capacity needs furnished by SAM have been adopted. These capacities are as follows:

1.	Montara Sanitary District	0.40mgd
2.	Granada Sanitary District	0.60 mgd
3.	City of Half Moon Bay	1.00 mgd

The Local Share portions of project Units 1 and 2 have been funded using these capacity needs. Since only MSD and GSD participated in these two project units the cost sharing percentages are as calculated below:

Units 1 and 2

1.	Montara Sanitary District	0.4/1.0	=	40%
2.	Granada Sanitary District	0.6/1.0	=	60%
3.	Half Moon Bay		=	0%

The Local Share portions of the project units have been funded, to date, utilizing these percentages. It is anticipated that once HMB's Local Coastal Plan is certified redistributions and credits will be made for portions already funded based on the final calculated cost sharing percentages. Operation and Maintenance as well as Capital Costs for Units 3 and 4 will be split among the agencies as follows:

1.	Montara Sanitary District	20%
2.	Granada Sanitary District	30%
3.	Half Moon Bay	50%

D. PROJECT FINANCING

Each member agency of SAM has an established policy of financing wastewater system expansion via a one-time charge (connection fee) assessed to new users at the time they connect to the system. To date, the Local Shares of Project Units 1,2, and 4 have been financed from capital reserve funds accumulated via connection fees. The Local Share portions of Unit 3 and the remainder of Unit 4 will be financed from remaining capital reserve funds and from the sale of bonds. MSD has voter authorization to sell $600,000 worth of bonds of which a portion will be sold to Farmers Home Administration. GSD has authorization to sell $670,000

worth of bonds. HMB has voter authorization to sell $700,000 worth of bonds.

The bond authorization and remaining capital reserve funds are sufficient to finance project Unit 3 and it is anticipated that it will be sufficient to fund the completion of Unit 4.

III. ANNUAL REVENUE REQUIREMENTS

The annual revenue requirements for SAM are categorized as Administrative, Capital Costs, and Operation and Maintenance expenses. Capital costs are defined as outlays for assets whose useful life is greater than one year. In the usual agency financing arrangements, annual revenue requirements for capital expenses include debt service (both principal and interest) for capital projects, capital outlays financed from current year revenues or from capital reserves, and reserve accruals for future year capital projects. Since the Joint Powers Agreement provides for financing of the wastewater treatment facilities project on a cash basis by the member agencies, no debt service has been included in the annual expenses for SAM. However, debt service has been considered for the individual member agencies.

Operation and maintenance (O&M) expenses include all costs for labor, power, chemicals, supplies and administration for wastewater operations during the fiscal year. For consistency with EPA guidelines replacement costs have been classified separately though replacements are ordinarily considered as capital outlays.

Annual revenue requirements are summarized in Table III-1. A more detailed discussion of each of the major components is contained in the following sections.

TABLE III-1

ANNUAL REVENUE REQUIREMENTS

I.	ADMINISTRATION		$110,000
II.	OPERATION & MAINTENANCE (Transmission, Treatment and Disposal)		
	A. Personnel Services	244,000	
	1. Salaries and Wages 2. Overtime 3. Benefits		
	B. Insurance	12,000	
	C. Auto Expense	11,850	
	D. Conference and Meetings	500	
	E. Materials and supplies	43,000	
	1. Office 2. O & M 3. Lab 4. Chemicals		
	F. Outside Service Contracts	41,650	
	1. Maintenance/Repair 2. Lab 3. Engineering 4. General 5. Annual Outfall Inspection 6. Sludge Disposal		
	G. Repairs and Maintenance	33,500	
	H. Telephone	1,000	
	I. Utilities	225,000	
	J. Continuing Education	500	
	K. Office Expense, Legal Publications	500	
	Subtotal Operation & Management		$613,500

III.	OPERATING RESERVE	$84,000
IV.	RENEWAL & REPLACEMENT	$557,080
	Total Revenue Requirements	$1,364,580

A. CAPITAL COSTS

Capital costs which have been, or will be financed by SAM for the Wastewater Treatment Facilities Project are summarized in Table II-1. It was assumed for the purpose of this report that these capital expenditures will occur prior to the first full year of operation and therefore the annual revenue requirements presented do not include capital expenditures for the treatment system. Since the collection systems are maintained, at this time, by each of the member agencies, no provision has been made for capital expense for the collection system in the annual revenue requirements for SAM.

B. ADMINISTRATIVE COSTS

Administrative costs include salaries and benefits for the General Manager and other administrative, clerical, and accounting personnel, office overhead, directors fees, engineering and legal retainers , audit and financial services, and general office expense.

C. OPERATION AND MAINTENANCE COSTS

The operation and maintenance costs shown in Table III-1 are estimates of line item by line item costs of operating and maintaining the intertie pipelines, pumping facilities, wastewater treatment facilities, and ocean outfall facilities constructed through the Clean Water Grant Process. It should be noted that these estimates were prepared prior to completion of the majority of these facilities and, therefore, must necessarily be based on experience with systems of a similar type, tempered with a practical understanding that no two treatment plants operate exactly the same or require the same level of annual expenditures.

The following discussion will explain in detail the derivation of each of the line item costs shown in Table III-1, Annual Revenue Requirements.

1. Personnel Services

(a) Salaries and Wages

The staffing requirements for the SAM facilities were based on an evaluation of the personnel required to operate and

maintain the wastewater treatment system in such a manner so as to produce a quality effluent.

The appropriate staffing level on a seven day a week, 8 hour per day basis is evaluated to be:

1. One Superintendent who will have responsibility for operation and maintenance of the total system. The manager's authority would include the following:

   a. Project management

   b. Staffing

   c. Training of personnel

   d. Budget control

   e. Reporting to regulatory agencies

   f. Reporting to the General Manager

   g. Purchasing of supplies and equipment

2. One Senior Operator working under the direction of the Superintendent who is responsible for the day-to-day operation of the system. Senior Operator duties would include supervision of the following activities:

   a. Daily process operation and modifications

   b. Record keeping

   c. Basic laboratory testing

   d. Grounds & equipment maintenance

3. Two Plant Operators responsible under the Senior Operator for PLANT OPERATIONS. Their duties would include the performance of the following activities:

   a. Daily process operation and modification

   b. Record keeping

4. Two Mechanics and two Utility Persons who are responsible, under the senior operator and the superintendent for all routine & major maintenance activities for the treatment plant and for the pump stations and intertie pipelines. Their duties would include:

a. Overall facility maintenance

b. Maintenance record keeping

c. Grounds maintenance

d. Assist plant operator as required

5. One Lab Technician to perform the routine Lab analysis.

(b) Overtime

Overtime costs are estimated to be five percent of Salaries and Wages.

(c) Benefits

Benefits include such costs as premiums for medical, dental and optical health care coverage, life insurance and any other fringe benefit items, for example, work boot and clothing allowance, which are paid for totally or in part by the employer on behalf of the employee. For the purpose of this analysis, benefits are estimated to be twenty one percent of the Salaries and Wages.

2. Insurance

This item includes the cost of liability insurance and Workers' compensation based on the following formulas:

1.	Liability:	$4.19/$100 of total payroll
2.	Workers' Comp:	1.23% of total payroll
	TOTAL:	$5.42/$100 of total payroll

3. Auto Expense

This cost category includes fuel, lubricants, maintenance and repairs needed for vehicles to be used for this project.

4. Conferences and Meetings

The cost for attending the annual state conference and related training/upgrade seminars is estimated in this item, including air fare, lodging, meals and conference fees.

5. Materials and Supplies

(a) Office Supplies

Costs for various types of office supplies are estimated in this item. Examples are paper, pencils, file folders, tape, paper clips and other related materials.

(b) Operation and Maintenance Supplies

Estimated here are any operating supplies such as lubricants, cleaning aids, nuts, bolts, solvents, and other items related to plant O&M. This estimate is based on experience with systems similar to the SAM treatment plant.

(c) Laboratory Supplies

This estimate includes reagents, glassware, instrumentation and other supplies and equipment related to the laboratory.

(d) Chemical Supplies

This category includes chemicals and related supplies needed for processing of the wastewater.

6. Outside Service Contracts

(a) Outside Service Contracts - Maintenance & Repair

This line item includes costs for special, contract repair and maintenance work which requires special equipment and/or training to perform.

(b) Outside Services-Laboratory

This budget item includes costs of analyses which are performed by a commercial laboratory. Samples are sent to the commercial lab which conducts the required tests and returns a written report of its findings to the plant staff. These

reports are normally included in information sent to regulatory agencies as required by the NPDES permit. It is assumed for the present that Biochemical Oxygen Delmand (BOD), Suspended Solids (SS), and pH will be run by plant personnel. All other analyses will be run by a commercial lab.

(c) Outside Services-Engineering

Estimated in this item is the cost of engineering services which are typically required during the start-up of a new facility, as well as costs for problems which may arise in the future which require engineering consultation.

(d) Outside Services-General

This cost is estimated for such services as uniform supply, trash hauling, fire extinguisher recharge and other related services required for plant operation and maintenance.

(e) Sludge Disposal

The cost of removing sludge from the plant site is estimated in this item. Dump fees, truck and loader rental and other sludge disposal costs are included.

7. REPAIRS AND MAINTENANCE

All costs for maintaining plant equipment is budgeted here. Included are such items as bearings, pump packing, motor repair, belts, welding, welding supplies and other similar types of work and supplies.

8. TELEPHONE

This category includes all communication costs including but not limited to telephone, telephone alarms, emergency "beeper" systems and other communication costs.

9. UTILITIES

Utility costs are largely the result of electrical usage at the treatment plant. The basis for cost determination is Pacific Gas and Electric Company rate schedule number A-1, effective Jan. 1,1982.

Two types of charges are analyzed for the purpose of this report namely the demand charge and the energy charge.

(a) Demand Charge

The demand charge is set at $ 91.00 per month per meter for the first 40 KW of demand. For demand above 40 KW, an additional charge of $ 1.99 per meter per month per KW is assessed.For demand above 300 KW a charge of $ 1.82 per meter per month per KW is assessed. The average KW demand for the sewage treatment plant is estimated to be about 300 KW. Experience with systems similar to the SAM plant indicates that the peak demand is on the order of two times the average KW demand. Thus, the peak demand for the sewage plant is estimated to be about 600 KW.

(2.) Energy Charge

Energy charges are assessed at the rate of $.082 per KWH. The estimated energy consumption for the sewage plant is detailed in Table IV-2. On an annual consumption of 2,500,000 KWH, the energy charge is calculated to be:

2,500,000 KWH x .082 = $ 205,000 per year

The total annual electrical charge for the sewage plant for the first year is estimated to be:

Demand Charge:	$ 20,000
Energy Charge:	$ 205,000
TOTAL:	$ 225,000

Electrical Usage

Treatment Works	KWH/yr
1. Comminutors	4,900
2. Influent Pumps	80,000
3. Primary Sewage Pumps	6,535
4. Grit Pumps	19,605
5. RAS Pumps	106,135
6. WAS Pumps	21,915
7. Grit Washer Motor	655
8. Effluent Pumps	85,000
9. Belt Filter Feed Pumps	16,000
10. Digested Sludge Pumps	9,000
11. No. 1 Water Pumps	6,700
12. No. 3 Water Pumps	137,965
13. Sample Pumps	39,210
14. Sample Pump	19,600
15. Sump Pump (2 HP)	140
16. Sump Pump (3/4 HP)	645
17. Sump Pump (1/2 HP)	500
18. Sump Pump (3/4 HP)	665
19. Primary Clarifier	9,800
20. Traveling Bridge	6,535
21. Sludge Removal Power	500
22. Grit Blowers	16,000
23. Aeration Blowers	1,095,000
24. Dry Polymer Feeder	500
25. Polymer Agitator	2,440
26. Belt Filter	19,605
27. Sludge Spray Water Pumps	49,010
28. Sludge Belt Conveyor Motor	4,900
29. Plant Air Compressor	12,250
30. Plant Air Dryer	500
31. Low Speed Aerator	260,000
32. General Facilities Power	100,000
Subtotal	2,132,210 KWH

Intertie Pipeline Pumping Facilities	
1. Montara Pump Station	70,000
2. Portola Pump Station	160,000
3. Princeton Pump Station	130,000
Subtotal	360,000
Total All Facilities	2,492,210 KWH

10. Continuing Education

Costs are estimated for job related books, magazines, training programs, correspondence courses, seminars and other educational costs required to maintain a continuing education program for the staff which will keep the staff educated and trained in the latest wastewater treatment technology.

11. Office Expense

This line item covers cost involved with miscellaneous office supplies, equipment, and expenses which are identified with the wastewater operation and maintenance function (i.e; regulatory reporting, purchasing of supplies and equipment, administrative reports, etc).

D. OPERATING RESERVE

This line item provides a reserve fund to cover unexpected and non budgeted operating and maintenance costs (ie. unexpected utility rate increases, costs due to higher than projected flows, etc.)

E. RENEWAL AND REPLACEMENT

This item budgets equipment and structure renewal and replacement costs which, at a minimum, will ensure that sufficient funds are set aside to guarantee that the original design capacity is retained - as required by Clean Water Grant requirements. Each structure and piece of equipment has been evaluated to determine its replacement cost and its anticipated useful service life. The line item amount has been set so that sufficient capital is accrued in the sinking fund so that equipment and structures can be renewed and or replaced as their useful service lives are reached. An allowance has been made for projected cost increases due to inflation and a credit applied for the effect of interest earned and reinvested in the sinking fund. The replacement costs for each unit have been calculated for the first full year of operation - projected to be 1983. An allowance has been added to projected construction costs to account for engineering, contingencies, and construction inspection.

SUMMARY OF RENEWAL AND REPLACEMENT COSTS

Project Unit	Description	Estimated 1983 Cost	Annual Renewal Replacement Cost
1.	Intertie Pipeline & Structures	$2,000,980	$41,820
2.	Pumping Facilities		
	a. Portola P.S.	2,025,790	74,270
	b. Montara P.S.	767,580	29,290
	c. Princeton P.S.	417,400	15,835
3.	Treatment Works	7,893,060	315,865
4.	Ocean Outfall	6,000,000	80,000
		Total	$557,080

UNIT 1; PIPELINE 1983 REPLACEMENT COST

Item	Description	Estimated 1983 Cost	Useful Life	Annual Renewal & Replacement Cost
1.	Force Main	$1,036,175.00	50 years	
2.	Gravity Interceptor	555,380.00	50 years	
3.	Miscellaneous construction Costs	105,450.00	50 years	
4.	Manholes & junction structures	61,125.00	50 years	
5.	Miscellaneous Structures & Appurtenances	182,850.00	50 years	
	Sub Total	$1,940,980.00	50 years	$38,820.00
6.	Air and Vacuume Release Valves	$ 44,500.00	20 years	
7.	Blow Offs	$ 15,500.00	20 years	
	Subtotal	$ 60,000.00	20 years	$ 3,000.00
Total 1983 Replacement Cost		$2,000,980.00		
Total Annual Replacement Cost				$41,820.00

UNIT 2; PUMP STATION 1983 FACILITY REPLACEMENT COST

Portola Pump Station

Item	Description	Estimated 1983 Cost ($)	Useful Life Yrs.	Annual Renewal & Replacement
1.	Structure	$1,080,000	40	$27,000
2.	Roof and W.P.	37,275	20	1,865
3.	Painting	27,060	12	2,255
4.	Pipe	157,000	20	7,850
5.	Generator	73,700	20	3,685
6.	Compressors	14,730	20	735
7.	Sluice gate	5,660	20	285
8.	Pumps	117,510	20	5,875
9.	Tanks	29,195	15	1,945
10.	Chlorine System	46,325	12	3,860
11.	Odor System	19,700	15	1,315
12	Heating & Ventilation	131,300	20	6,565
13.	Miscellaneous metal	27,985	40	700
14.	Electrical	285,350	25	10,335
Total 1983 Estimated Cost		$2,052,790		
Total Annual Replacement Costs				$74,270

UNIT 2; PUMP STATION 1983 FACILITY REPLACEMENT COST

Montara Pump Station

Item	Description	Estimated 1983 Cost ($)	Useful Life yrs.	Annual Renewal & Replacement
1.	Structure	$305,000	40	$ 7,625
2.	Roof and W.P.	2,790	20	140
3.	Painting	10,160	12	845
4.	Pipe	84,150	20	4,210
5.	Generator	52,180	20	2,610
6.	Compressor	7,495	20	375
7.	Comminutor	28,305	15	1,890
8.	Sluice gates	13,475	20	675
9.	Pumps	30,385	20	1,520
10.	Tanks	20,670	15	1,380
11.	Heating & Ventilation	11,245	20	560
12.	Misc. Metal	24,605	40	615
13.	Electrical	165,150	25	6,605
14.	10" VCP	11,970	50	240
	Total 1983 Replacement Cost	$767,580		
	Total Annual Replacement Costs			$29,290

UNIT 2; PUMP STATION 1983 FACILITY REPLACEMENT COST

Princeton Pump Station

Item	Description	Estimated 1983 Cost ($)	Useful Life Yrs.	Annual Renewal & Replacement
1.	Structure	$120,275	40	$ 3005
2.	Roof & Waterproofing	6,575	20	330
3.	Painting	3,180	12	265
4.	Piping	32,500	20	1625
5.	Generator	52,100	20	2605
6.	Sluice Gate	6,900	20	345
7.	Pumps	26,680	20	1335
8.	Tanks	20,485	15	1365
9.	Heating & Ventilation	10,980	20	550
10.	Miscellaneous Metal	4,030	40	100
11.	Electrical	81,900	25	3275
12.	15" ACP Interceptor	51,795	50	1035
Total 1983 Replacement Cost		$417,400		
Total Annual Replacement Cost				$15,835

UNIT 3; TREATMENT WORKS 1983 REPLACEMENT COSTS

Item	Description	Estimated 1983 Cost	Useful Life	Annual Renewal & Replacement
1.	Headworks			
	Structure	$111,400	40	$ 2,785
	Equipment	184,000	15	12,265
2.	Grit tanks and primary clarifiers			
	Structure	463,325	40	11,585
	Equipment	216,025	15	14,400
3.	Sludge pump room			
	Equipment	198,850	20	9,940
4.	Pipe gallery			
	Structure	127,095	40	3,175
	Equipment	58,830	20	2,940
5.	Aeration basins			
	Structure	597,415	40	14,935
	Equipment	260,230	25	1,410
6.	Secondary clarifiers			
	Structure	409,585	40	10,240
	Equipment	399,725	25	15,990
7.	Chlorine contact basin			
	Structure	78,015	30	2,600
	Equipment	25,970	12	2,165
8.	Chlorine storage facility			
	Structure	65,510	30	2,185
	Equipment	21,835	12	1,820

UNIT 3; TREATMENT WORKS 1983 REPLACEMENT COSTS

Item	Description	Estimated 1983 Costs	Useful Life	Annual Renewal & Replacement
9.	Effluent pump station			
	Structure	6,150	40	155
	Equipment	$141,510	20	7,075
10.	Process blowers			
	Equipment	240,620	20	12,030
11.	Sludge dewatering system			
	Equipment	508,375	15	33,890
12.	Mechanical building			
	Structure	285,140	40	7,130
	Equipment	55,015	15	3,370
13.	Sludge pump building			
	Structure	64,025	40	1,600
	Equipment	202,780	15	13,520
14.	Administration bldg.			
	Structure	462,690	40	11,565
	Equipment	154,230	15	10,280
15.	Site Work			
	Structure	550,990	40	13,775

16.	Yard Piping Equipment	195,995	15	13,065
17.	Painting Structure	131,230	12	10,935
18.	Cable vault room Structure	62,330	40	1,560
19.	Stand-by power Equipment	405,770	40	10,145
20.	Electrical & instrument Equipment	1,208,400	25	48,335
Total 1983 Replacement Cost		$7,893,060		
Total Annual Renewal and Replacement Cost				$315,865

IV COST ALLOCATIONS

A. CAPITAL COST ALLOCATION

Capital Costs have been distributed to the three member agencies in accordance with the provisions of the Joint Powers Agreement according to the prorata share of the Phase I capacity needs identified in the Local Coastal Plans for each agency.

The Capital Costs detailed for project Units 1 and 2 are taken from project accounts. Project Unit 3 Capital Costs are based on actual contract cost with an appropriate allowance for estimated costs for construction contingencies, construction management and engineering, and project administration. Project Unit 4 Capital Costs are derived from project accounts for the portion completed to date plus an allowance for estimated costs to complete the remainder of the project.

Certain costs from the general project account (ie. Legal, Miscellaneous Costs, Predesign Costs, and General Costs) which have not been designated against a particular project unit account have been prorated against each unit based on the prorata share of the construction costs.

The Local Share and Grant Fundable portions of the several project units have been estimated from project records for Units 1,2 & 3 and developed from evaluations of eligible and ineligible items for Unit 4. These shares are summarized in Table II-3.

Capital Costs have been distributed between the four parameters which affect the cost of constructing the SAM wastewater system:

1. Average daily flow
2. Infiltration/Inflow
3. BOD 5 Concentration
4. Suspended Solids Concentration

Each project unit has been evaluated to determine the portion of the capital costs which can be assigned to each parameter. These percentages are summarized in Table IV-1 below.

TABLE IV-1

Project Unit	I/I	Flow	BOD 5	SS
1	5%	95%		
2.	5%	95%		
3.	10%	37%	31%	22%
4.	5%	95%		

These percentages can be utilized in assigning the portion of wastewater system capital costs to be recaptured from future connection fees. The cost are further detailed in Table IV-2.

TABLE IV-2

Agency	Project Unit	Local Share Capital Cost	Capital Cost Distribution I/I	Flow	BOD	SS
Montara	1	91,650	4,583	87,067		
	2	203,250	10,163	193,087		
	3	274,800	27,480	101,676	85,188	60,456
	4	116,500	5,875	111,625		
		686,200				
TOTAL			48,101	493,455	85,188	60,456
Granada	1	137,475	6,874	130,601		
	2	304,875	15,244	289,631		
	3	412,200	41,220	152,514	127,782	90,684
	4	176,250	8,813	167,437		
		1,030,800				
TOTALS			72,151	740,183	127,782	90,684
Half Moon Bay	1					
	2					
	3	687,000	68,700	254,190	212,970	151,140
	4.	293,750	14,688	279,062		
		980,750				
TOTALS			83,388	533,252	212,970	151,140
		2,697,750				

B. ANNUAL COST ALLOCATION

1. Allocation to Member Agencies

The Annual Revenue Requirements detailed in TABLE III-1 have been allocated between the three member agencies according to the cost sharing arrangements discussed in Section II-C, Cost Sharing Arrangements. The percentage of the annual revenue requirement allocated to each agency is detailed as followed:

1. Montara 20%
2. Granada 30%
3. Half Moon Bay 50%

The detailed line item by line item allocation is shown in TABLE IV-3 These line item costs are further segregated within each agencies costs by the costs associated with each wastewater loading parameter in TABLE IV-4. These breakdowns were developed after an analysis of the costs associated with each parameter on a line item by line item basis. The costs were assigned to the line items using the following percentages:

	I/I	Flow	BOD	SS
1. Administration	3%	63%	18%	16%
2. Operation and Maintenance	3%	70%	14%	13%
3. Operating Reserve	3%	60%	19%	13%
4. Renewal and Replacement	8%	63%	16%	13%

TABLE IV-3

	BUDGET ITEM	ANNUAL REVENUE REQ'MT $	BUDGET ALLOCATIONS MONTARA $	GRANADA $	HMB $
1	ADMINISTRATION	110000	22000	33000	55000
2	OPERATION & MAINT.	613500	122700	184050	306750
3	OPERATING RESERVE	84000	16800	25200	42000
4	RENEWAL & REPLACMT	557080	111416	167124	278540
	TOTALS	1364580	272916	409374	682290

TABLE IV-4

	BUDGET ITEM	AGENCY ANNUAL EXPENSE	ANNUAL EXPENSE ALLOCATION TO LOADING PARAMETER				TOTAL
			I/I	FLOW	BOD	SS	
		$	$	$	$	$	
MONTARA							
1	ADMINISTRATION	22000	660	13860	3960	3520	22000
2	OPERATION & MAINT	122700	3681	85890	17178	15951	122700
3	OPERATING RESERVE	16800	504	11760	2352	2184	16800
4	RENEWAL & REPLACMT	111416	8913	66849.6	21169	14484	111416
	TOTALS	272916	13758	178359.6	44659	36139	272916
	% OF TOTAL EXPENSE		5	65	16	13	100
GRANADA							
1	ADMINISTRATION	33000	990	20790	5940	5280	33000
2	OPERATION & MAINT	184050	5522	128835	25767	23927	184050
3	OPERATING RESERVE	25200	756	17640	3528	3276	25200
4	RENEWAL &REPLACMT	167124	13370	100274.4	31754	21726	167124
	TOTALS	409374	20637	267539	66989	54209	409374
	% OF TOTAL EXPENSE		5	65	16	13	100
CITY HMB							
1	ADMINSTRATION	55000	1650	34650	9900	8800	55000
2	OPERATION & MAINT	306750	9203	214725	42945	39878	306750
3	OPERATING RESERVE	42000	1260	29400	5880	5460	42000
4	RENEWAL & REPLACMT	278540	22283	167124	52923	36210	278540
	TOTALS	682290	34396	445899	111647.6	90348	682290
	% OF TOTAL EXPENSE		5	65	16	13	100

TABLE IV-4.1
COMBINED AGENCY AND SAM BUDGETS

	BUDGET ITEM	AGENCY ANNUAL EXPENSE	ANNUAL EXPENSE ALLOCATION TO LOADING PARAMETER				TOTAL
			I/I	FLOW	BOD	SS	
		$	$	$	$	$	
MONTARA							
1	ADMINISTRATION	86000	2580	54180	15480	13760	86000
2	OPERATION & MAINT	182700	5481	127890	25578	23751	182700
3	OPERATING RESERVE	22800	684	15960	3192	2964	22800
4	RENEWAL & REPLACMT	173830	13906	104298	33028	22598	173830
5	DEBT SERVICE	59500	4760	35700	11305	7735	59500
6	CAPITAL PROJECTS	25000	2000	15000	4750	3250	25000
	TOTALS	549830	29411	353028	93333	74058	549830
	% OF TOTAL EXPENSE		5	64	17	13	100
GRANADA							
1	ADMINISTRATION	105000	3150	66150	18900	16800	105000
2	OPERATION & MAINT	269050	8072	188335	37667	34977	269050
3	OPERATING RESERVE	33700	1011	23590	4718	4381	33700
4	RENEWAL &REPLACMT	271000	21680	162600	51490	35230	271000
5	DEBT SERVICE	92380	7390	55428	17552	12009	92380
6	CAPITAL PROJECTS	55000	4400	33000	10450	7150	55000
	TOTALS	826130	45703	529103	140777	110547	826130
	% OF TOTAL EXPENSE		6	64	17	13	100
CITY HMB							
1	ADMINSTRATION	87000	2610	54810	15660	13920	87000
2	OPERATION & MAINT	354250	10628	247975	49595	46053	354250
3	OPERATING RESERVE	46700	1401	32690	6538	6071	46700
4	RENEWAL & REPLACMT	359040	28723	215424	68218	46675	359040
5	DEBT SERVICE	93800	7504	56280	17822	12194	93800
6	CAPITAL PROJECTS	50000	4000	30000	9500	6500	50000
	TOTALS	990790	54866	637179	167333	131413	990790

2. User Characteristics

The various categories of wastewater dischargers each agency are presented in TABLES IV-5 through IV-7. There are not at present, any industrial wastewater dischargers with in the SAM service area. The several categories of users include:

1. Residential
2. Commercial
3. Institutional
4. Septage Waste (HMB only)

Wastewater characteristics for residential users was derived from the project facilities plan. Characteristics for commercial, institutional, and septage waste dischargers were taken from published literature and from State Water Resources Control Board publications.

3. Allocation to Users

The annual revenue requirements, allocated by wastewater loading parameter as shown in TABLE IV-4, should be utilized to distribute sewer service charges to the various users within each agency. Using these costs and the user wastewater characteristics shown in Tables IV-5 through IV-7, the cost of wastewater service can be allocated to each user on the basis of the loading that each category of user applies to the system. The I/I cost should be spread evenly between all users.

As an example of the use of this system, consider residential users in Montara Sanitary District. Total annual residential volumes for Volume of Flow, BOD, and SS are 77.64 mg, 113305,3 lb, and 113305.3 lb respectively. The total annual volume district wide of Volume of Flow, BOD and SS are 91.25 mg, 151,093.5 lb and 136838.5 lb respectively. There are approximately 1560 users in the District, 41 of which are non-residential. Therefore the percentage of costs spread to the residential users should be:

1) I/I 1519/1560 = 97%

2) Flow 77.64/91.25= 85%

3) BOD 113305.5/151093.5= 75%